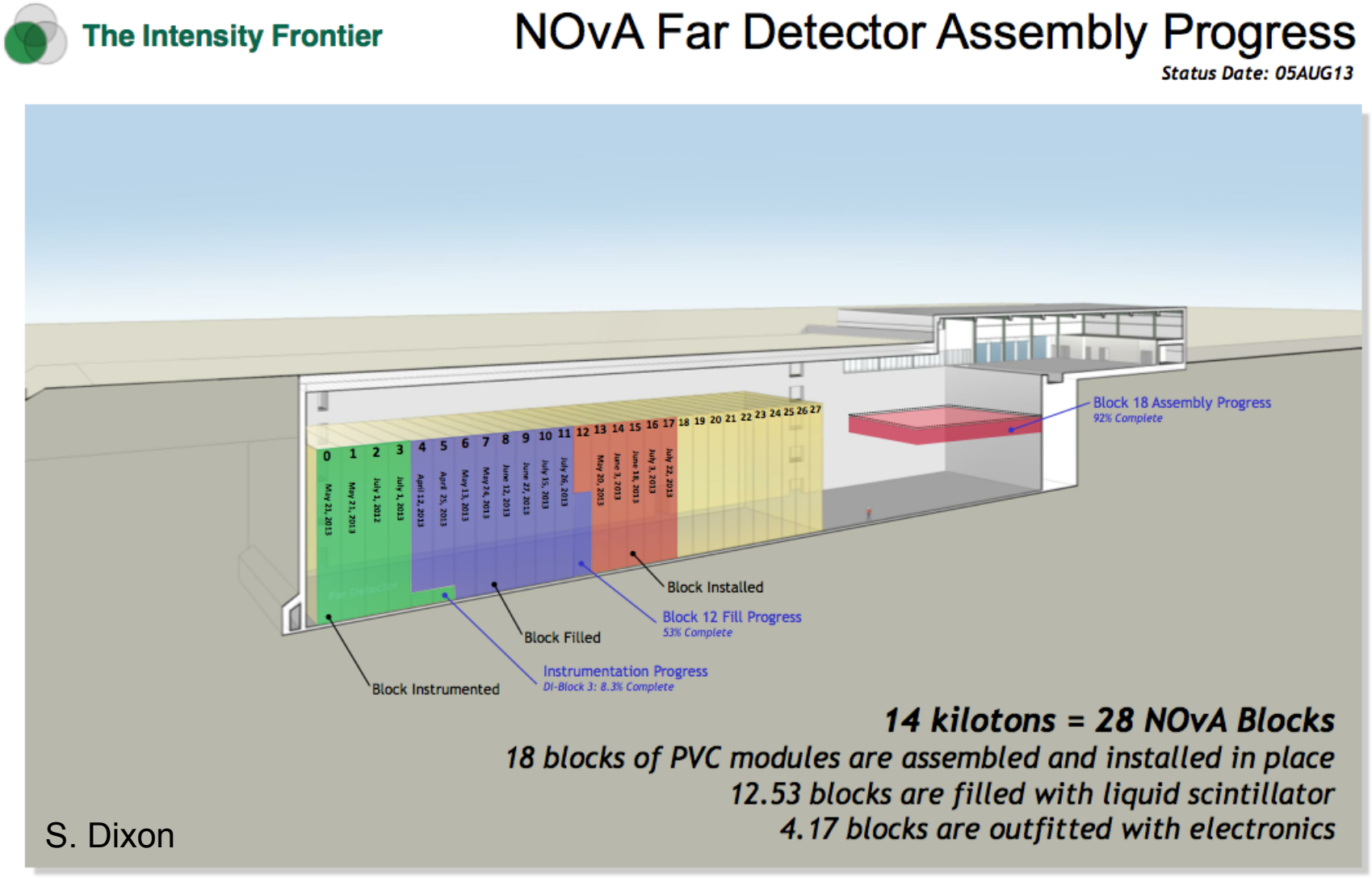
NOvA Experiment Status

Martin Frank University of Virginia

All Experimenter's Meeting, August 5, 2013

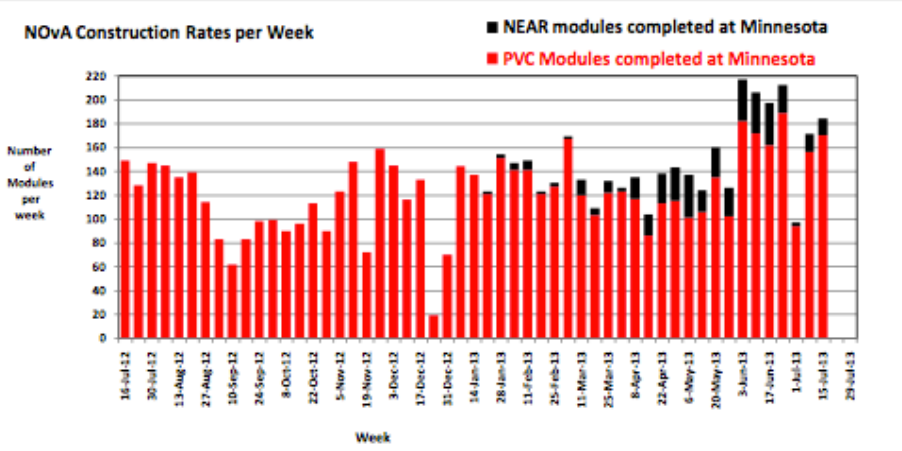
Far Detector Progress

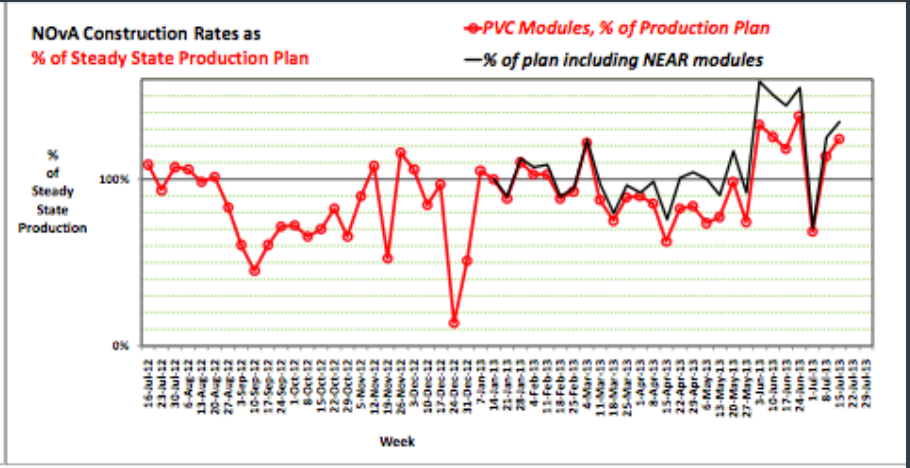


S. Dixon

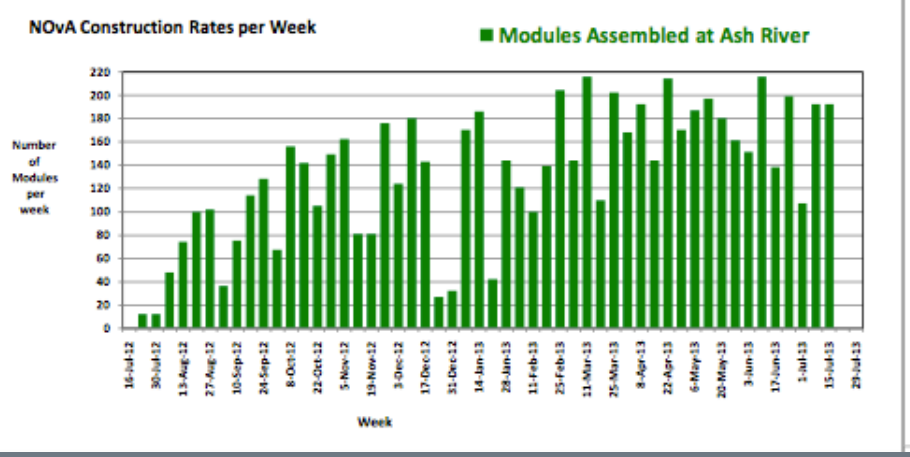
Far Detector Construction

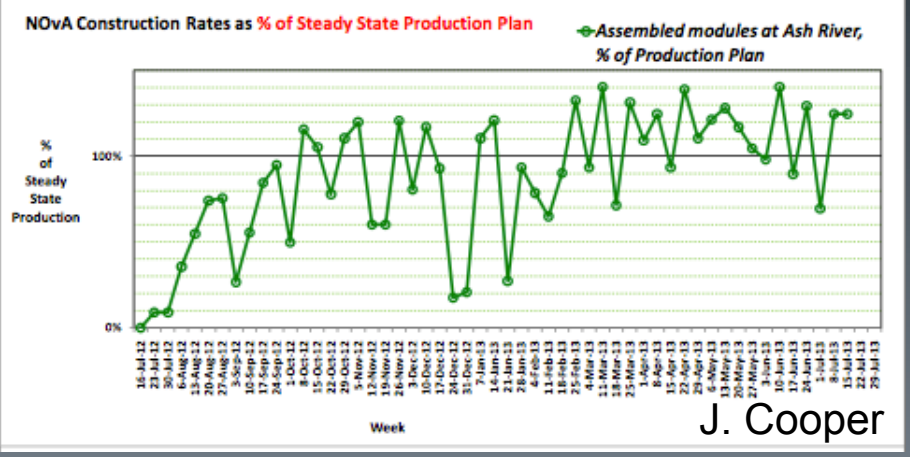
Module Production at UMN Factory





Block Assembly at Ash River





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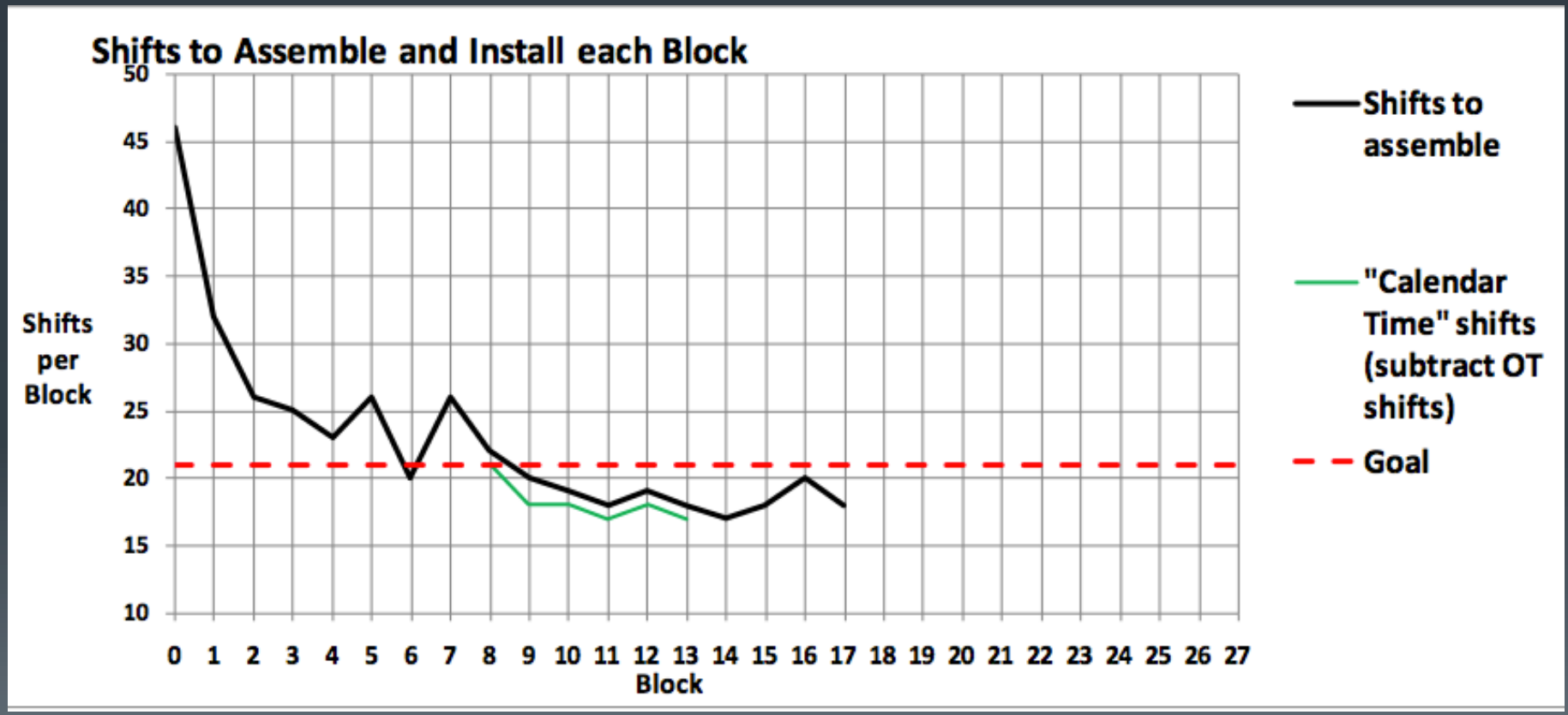
Block Assembly/Installation Time

18 shifts now typical per Block (~2.25 weeks calendar time)



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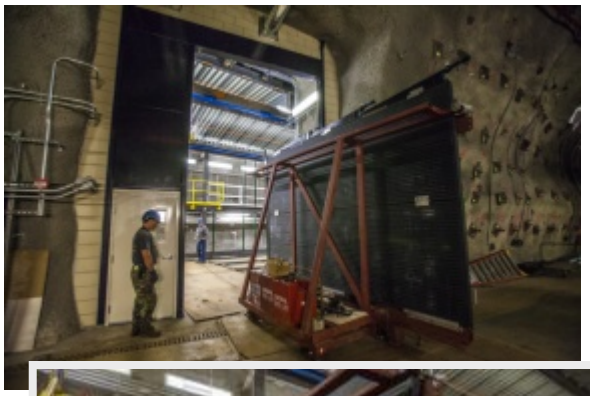
Near Detector Progress

The muon catcher is installed

- 1 mini-block (4 layers modules no steel) at North end went first,
  then 10 planes with steel and a module layer on each side.

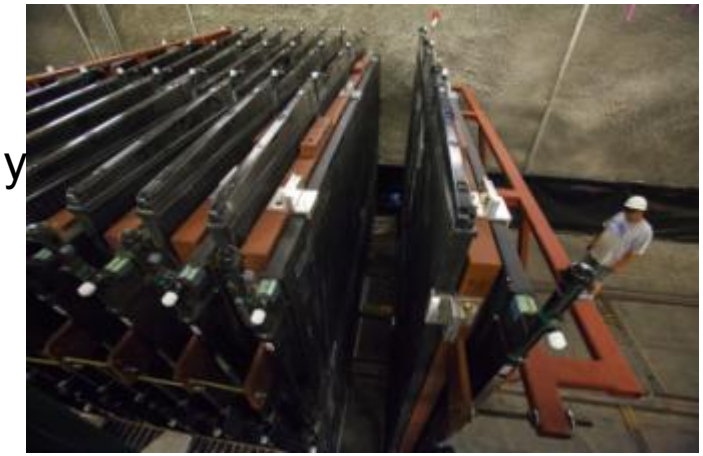
#8 transfer into hall



#8 transfer onto rails

#8 winch into place

#8 nearly in place



All 10 in place on Aug 1 (also note electronics mounted on sides of catwalk)

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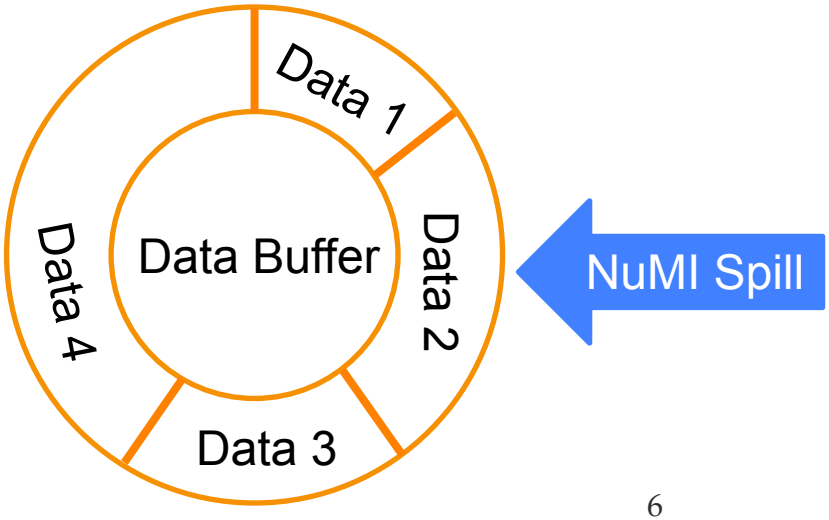
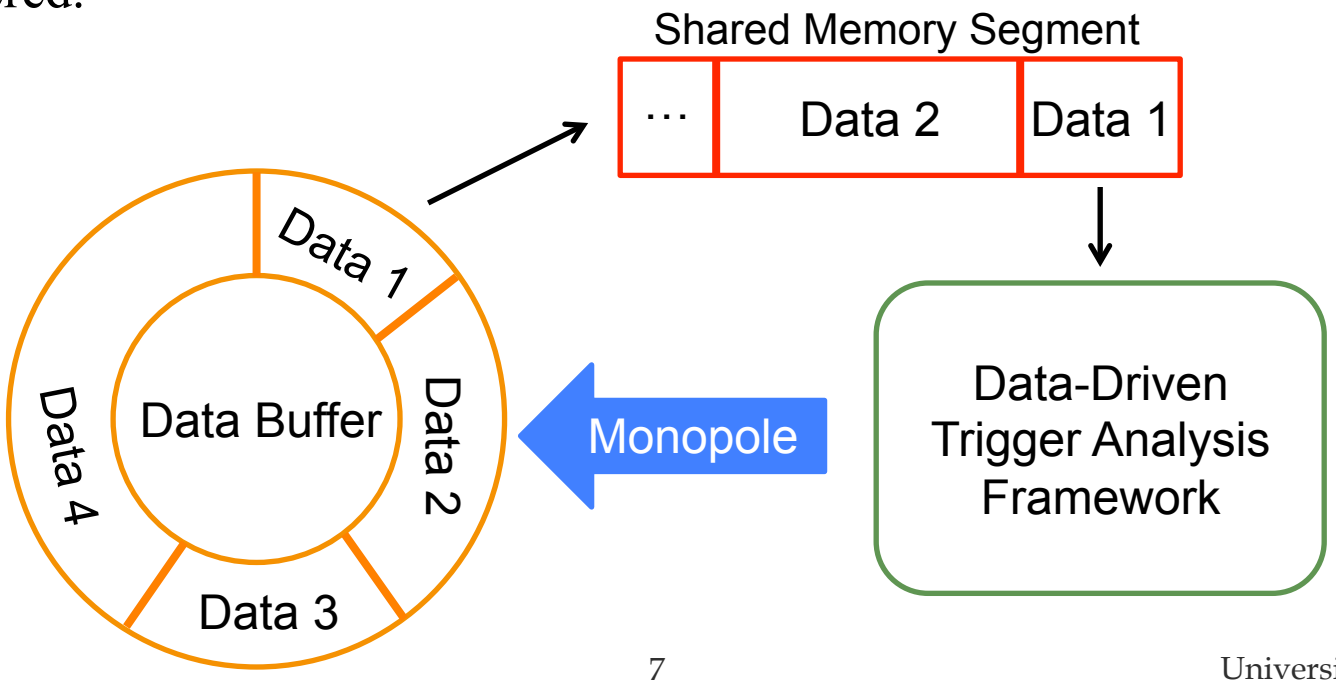
TRIGGER INTRODUCTION

- NO*v*A's standard triggers are:
  - NuMI
  - Booster
  - Cosmic Pulser (10 Hz)
- The triggers are issued using time stamps.
- The data buffer ring is filled with data from the detector and when a spill is registered, the corresponding data is selected and read out.



Trigger Introduction

- NO*v*A's data-driven triggers (DDT) are:
  - Monopole
  - Supernova
  - Muon Neutrino (contained, upward going)
  - Electron Neutrino
  - *etc.*
- The triggers are issued based on fast analysis of the data.
- The data is placed into a shared memory segment, analyzed and triggered.

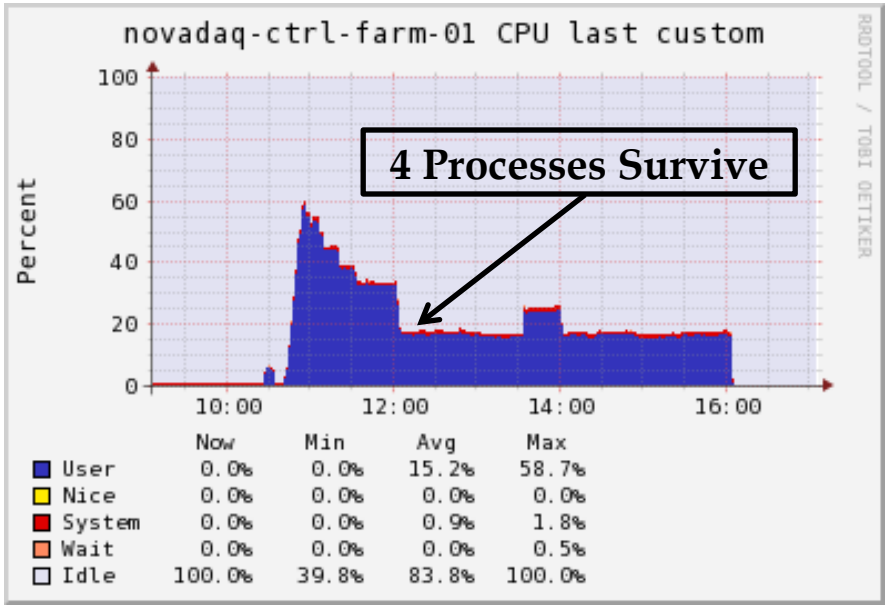


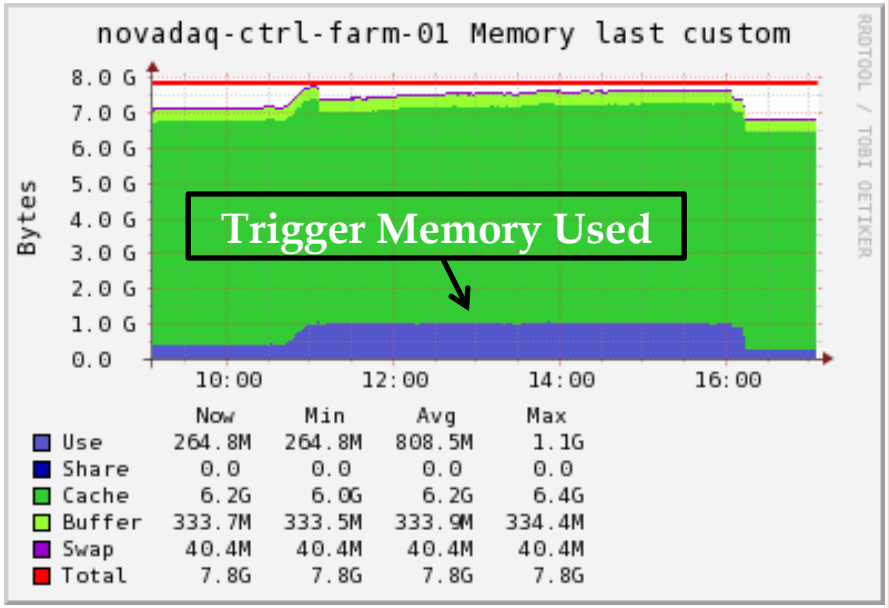
TRIGGER WEEK

- Last week, we assembled the NO*v*A trigger group and ran many tests on NDOS (Near Detector On the Surface) and the far detector.
- We are able to send trigger messages from our DDT framework (using ART + ARTDAQ) into the NO*v*A DAQ system!
- Data is properly recorded based on our messages.
- We are able to run several trigger processes in parallel.
- We had a first look at far detector data.
- This focused week of trigger work allowed us to focus in on the remaining issues for production running.

Trigger Week

- We started up several monopole trigger processes on NDOS.
- Many of them timed out, but four of them survived for a long time (~ 6 hours).
- CPU usage (left) on an 8 core farm node shows this.
- The good news are that the memory usage (right) is steady!
- We found that we have to tune our shared memory segment (*i.e.* increase depth) to prevent time-outs.





Summary

- Currently taking data with 5 kilotons of Far Detector
  - ~2 kilotons with full electronics (warm APDs)
  - > 1 million gallons of liquid scintillator in the detector
- Running day and swing shifts, 7 days per week – will start 24 hour coverage this weekend
- Online tools are being used to monitor FarDet commissioning progress
- Preparing for NUMI beam, e.g., development of trigger modes for more efficient capture of data